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# Complexation and self-assembling of sulfonatomethylated calix[4]resorcinarene with both organic and lanthanide ions in aqueous media

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## Abstract

The stoichiometry and binding constant of the paramagnetic lanthanide ion (Gd3+) with sulfonatomethylated calix[4]resorcinarene (H 8Xna4) were evaluated from the NMR relaxation data. Both 1H NMR spectroscopy and NMR relaxation data indicate that interaction of tetramethylammonium (TEMA) and N-methylpyridinium (MePy) cations with H 8Xna4 in the presence of Ln3+ (Lu3+ or Gd3+) results in the formation of ternary complexes [Ln(G)H 8X] with lanthanide ions, coordinated via sulfonate groups and organic cation included into the cavity of H8Xna4. The inclusion of long-chained N-decyl-(DePy) and N-cetylpyridinium (CPy) ions into H8Xna4 cavity leads to self-assembling which can be revealed by NMR relaxation method with Gd3+ probe ions. The excess of alkylpyridinium or TEMA cations leads to disassembling of (Gd) n(H8X)m(RPy)m aggregates. © 2004 Kluwer Academic Publishers.

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## Keywords

Inclusion, Lanthanide ion, Self-assembly, Water soluble calix[4]resorcinarene